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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/833,453	04/12/2001	Evelyn Jennifer Lin Paulsen	174PUS06106	3297

23543 7590 04/30/2003

AIR PRODUCTS AND CHEMICALS, INC.  
PATENT DEPARTMENT  
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ALLENTOWN, PA 181951501

EXAMINER
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YAO, SAM CHAUN CUA

ART UNIT	PAPER NUMBER
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1733

DATE MAILED: 04/30/2003

8

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/833,453

Applicant(s)

PAULSEN ET AL.

Examiner

Sam Chuan C. Yao

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-- **Th MAILING DATE of this communication app ars on th cov r she t with the correspondence addr ss --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7. 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is indefinite because it is unclear what is intended by the following limitation: "... consists essentially of at least 80wt% perfect prepolymers and less 2 wt% free isocyanate monomer". Is the recited weight % based on the total weight of an adhesive composition, based on the amount of prepolymers, etc.? Does the limitation "at least 80wt% perfect prepolymers" intended to read on: a) a prepolymer comprising at least 80 wt% perfect prepolymer and at most 20 wt% non-perfect prepolymer (i.e. oligomer) based on the total weight of the prepolymer or b) at least 80 wt% of perfect prepolymer is based on a total weight of an adhesive composition, wherein the prepolymer is 100% perfect prepolymer? For the purpose of examining this claim, it is assumed that this limitation requires the former (i.e. a prepolymer comprising at least 80 wt% perfect prepolymer and at most 20 wt% non-perfect prepolymer based on the total weight of a prepolymer).

Claim 6 is indefinite, because it is unclear how this claim which is dependent on claim 5 further limit claim 5. The limitation in this claim is identical to claim 5. Claim 12 is indefinite for essentially the same reason as claim 6.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cody et al (US 5,075,407) in view of Krebs et al (US 5,880,167).

With respect to claims 1-3, Cody et al teaches a liquid (Type 2) polyurethane foamable structural adhesive composition comprising a polyisocyanate (NCO), most preferably a diol (i.e. a functionality of 2) and a catalyst, wherein the equivalent NCO:OH ratio is most preferably about 2:1 (i.e. 100% perfect prepolymer, since the functionality of OH is 2, and NCO:OH ratio is 2) (abstract; col. 2 lines 41-64; col. 4 lines 25-67; col. 5 lines 16-53; col. 6 lines 6-14; col. 43-64; col. 7 lines 1-31). Cody et al also teaches decreasing the amount of free isocyanate content until it reaches within a target range of about  $\pm$  0.1% NCO (col. 4 line 14 to col. 7 line 32). In example 1, the amount of free isocyanate is about 2.05%.

Cody et al does not appear teach a free isocyanate target range content of less than 2 weight percent. However, it would have been obvious in the art to form a polyurethane foamable structural adhesive taught by Cody et al such that, a free isocyanate content is less than 2% by weight, because Krebs et al teaches the importance of reducing a residual free polyisocyanate content in making a polyurethane foamable adhesive comprising about 50-90 wt% of isocyanate prepolymer, the adhesive has less than 1%

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by weight of free di-isocyanate monomers (col. 2 lines 17-40; col. 8 lines 37-65); and also teaches obtaining a residual isocyanate monomer content of .16% by weight in example 15.

With respect to claims 4-6, see column 4 line 27 to column 5 line 53 of the Cody et al patent.

With respect to claims 7-16, it is implicitly understood that one in the art would inherently perform the recited process in claim 7, when two substrates are being joined or sealed using the polyurethane adhesive taught by Cody et al. As for claims 8-16, these claims are mere repetition of the above rejected claims. For the same reasons set forth above, these claims would have been obvious in the art.

### ***Response to Arguments***

5. Applicant's arguments with respect to claim 1 has been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sam Chuan C. Yao whose telephone number is (703) 308-4788. The examiner can normally be reached on Monday-Friday with second Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael W Ball can be reached on (703) 308-2058. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-7115 for regular communications and (703) 305-7718 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0651.



Sam Chuan C. Yao  
Primary Examiner  
Art Unit 1733

scy  
April 28, 2003